

WHAT IS CLAIMED IS:

(1) A circuit board comprising:

a first electrically conductive member having a first and a second surface, having a first aperture with
5 a first interior surface, and having a second aperture with a second interior surface;

adhesive material which is applied upon certain portion of said first and second surfaces, and which is applied upon said first interior surface of said first
10 aperture;

a first circuit assembly having at least a second electrically conductive member which is coupled to said adhesive material resident upon said first surface of said first electrically conductive member, said first
15 circuit assembly further including at least a third electrically conductive member and a first core member which is contained between at least said second and at least said third electrically conductive members and which includes at least one air-bridge;

a second circuit assembly having at least a fourth electrically conductive member which is coupled to said adhesive material resident upon said second surface of said first electrically conductive member, said second
20 circuit assembly further including at least a fifth electrically conductive member and a second core member
25

which is contained between a least said fourth and at least said fifth electrically conductive members;

a layer of dielectric material which is applied to at least said first circuit assembly; and

5 at least a sixth electrically conductive member which is disposed within said layer of dielectric material.

(2) The circuit board of claim 1 wherein said at least a sixth electrically conductive member is coupled to said
10 at least one air-bridge of said first circuit assembly.

(3) The circuit board of claim 2 wherein said at least a sixth electrically conductive member is coupled to said at least a third electrically conductive member of said first circuit assembly.

15 (4) The circuit board of claim 3 wherein a portion of solder mask material is disposed upon at least a portion of said at least a sixth electrically conductive member.

(5) The circuit board of claim 1 wherein said first electrically conductive member is formed from copper.

20 (6) The circuit board of claim 1 wherein said first electrically conductive member is formed from copper.

(7) The circuit board of claim 1 wherein said first electrically conductive member comprises an electrical ground plane.

25 (8) The circuit board of claim 1 wherein said dielectric material is applied upon said first interior surface.

(9) A method for making a circuit board comprising the steps of:

providing a first electrically conductive member;

providing a first assembly having a core member upon
5 which a second electrically conductive member is disposed;

forming at least one aperture within said first electrically conductive member, said at least one aperture having a first interior surface;

10 placing said dielectric material upon said first interior surface and upon said first electrically conductive member;

coupling said second electrically conductive member to said layer of dielectric material;

15 removing a portion of said core member, thereby forming at least one electrically conductive air bridge by use of said second electrically conductive member;

placing a second layer of said dielectric material upon said first assembly;

20 placing a third electrically conductive member upon said second layer of said dielectric material; and

coupling said third electrically conductive member to said at least one air-bridge, thereby forming a circuit board.

25 (10) The method of claim 9 wherein said first electrically conductive member is formed from copper.

(11) The method of claim 9 further comprising the step of forming a second aperture having a second interior surface within said first electrically conductive member.

(12) The method of claim 11 further comprising the step
5 of coupling said first electrically conductive member to a source of electrical ground potential.

(13) The method of claim 9 further comprising the steps of:

providing a second assembly having a core member
10 upon which a fourth electrically conductive member is disposed;

coupling said fourth electrically conductive member upon said dielectric material resident upon said first electrically conductive member;

15 placing a third layer of said dielectric material upon said second assembly;

forming an aperture within said third layer of dielectric material which terminates upon said fourth electrically conductive member; and

20 electroplating said aperture.

(14) A method for making a circuit board comprising the steps of:

providing a first electrically conductive member having a first and a second surface;

forming a first aperture within said first electrically conductive member having a first interior surface;

forming a second aperture within said first electrically conductive member having a second interior surface;

selectively applying a dielectric material to said first and second surfaces of said first electrically conductive member and to said first interior surface of said first aperture, thereby forming a first pre-circuit assembly;

providing a second pre-circuit assembly having a first core member including a first surface and a second surface, said second pre-circuit assembly further having at least one second electrically conductive member disposed upon said first surface of said first core member and having at least one third electrically conductive member disposed upon said second surface of said first core member;

providing a third pre-circuit assembly having a second core member including a first surface and a second surface, said third pre-circuit assembly having at least one fourth electrically conductive member disposed upon said first surface of said second core member and having at least one fifth electrically conductive member

disposed upon said second surface of said second core member;

selectively attaching said second pre-circuit assembly to said first pre-circuit assembly by attaching
5 said at least one third electrically conductive member to said dielectric material which is resident upon said first surface of said first electrically conductive member;

selectively attaching said third pre-circuit
10 assembly to said first pre-circuit assembly by attaching said at least one fourth electrically conductive member to said dielectric material which is resident upon said second surface of said first electrically conductive member;

15 selectively applying a certain etchant material to said first and second core members, effective to remove certain portions of said first and second core members, thereby forming at least one first air-bridge within said first pre-circuit assembly and at least one second air-
20 bridge within said second circuit assembly;

applying a certain solder mask material upon said second and third pre-circuit assemblies, effective to cover said at least one second, at least one third, at least one fourth, and at least one fifth electrically
25 conductive members and to underfill said at least one first air-bridge and said at least one second air-bridge;

selectively removing certain portions of said solder mask material, effective to selectively expose certain portions of said at least one second, at least one fourth, and at least one fifth electrically conductive members and said at least one first air-bridge and said at least second air-bridge;

placing an electrically conductive material upon said first, second, and third pre-circuit assemblies, thereby covering portions of said dielectric material which reside within said first aperture and portions of said first electrically conductive member which reside within said second aperture, covering said solder mask material, and covering said certain exposed portions of said at least one second, at least one fourth, and at least one fifth electrically conductive members;

selectively removing certain portions of said electrically conductive material which reside upon said solder mask material, thereby exposing a certain portion of said solder mask material; and

selectively applying a second dielectric material upon said exposed certain portions of said solder mask material and upon certain portions of said electrically conductive material, thereby forming a circuit board assembly.

(15) The method of claim 14 wherein said first electrically conductive member and said at least one

second, at least one third, at least one fourth, and at least one fifth electrically conductive members comprise copper material.

(16) The method of claim 14 wherein said first and second
5 core members comprise aluminum.

(17) The method of claim 14 wherein said step of placing said electrically conductive material upon said first, second, and third pre-circuit assemblies comprises electroplating copper upon said first, second, and third
10 pre-circuit assemblies.

(18) The method of claim 14 wherein said solder mask material structurally supports said at least one first air-bridge and said at least one second air bridge.

(19) The method of claim 14 wherein said step of removing
15 certain portions of said solder mask material comprises forming a least one aperture within said solder mask material and the step of placing a certain electrically conductive material upon said first, second, and third pre-circuit assemblies comprises applying said
20 electrically conductive material within said at least one aperture within said solder mask material.

(20) The method of claim 19 wherein said step of applying a second dielectric material comprises applying said second dielectric material within said at least one
25 aperture within said solder mask material.